BEST AVAILABLE COPY

The Petroleum Situation

A quarterly review from Energy Economics — THE CHASE MANHATTAN BANK, N.A. NEW YORK, N.Y. 10081

B1900-2 1/20/82

Vol. 6 – No. 2
JULY, 1982

AN OFFSHORE LEASING PROGRAM THAT MAKES SENSE

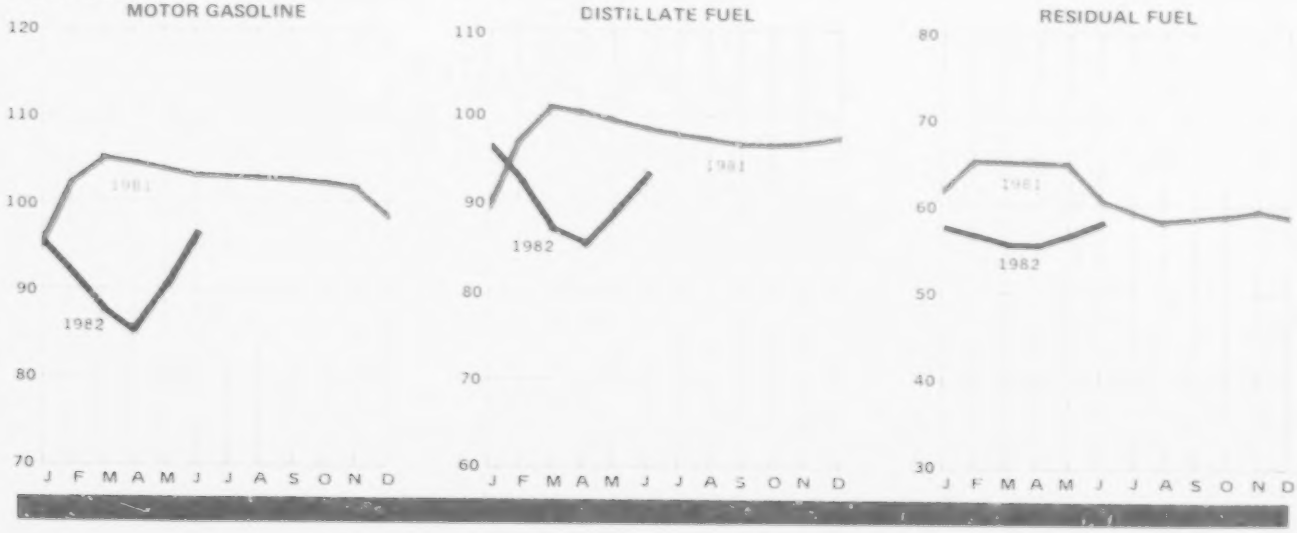
In a previous issue of the Petroleum Situation (Vol. 3, No. 12 – December, 1979), we expressed concern that U.S. energy development was being unnecessarily hindered by a restrictive leasing policy for the Outer Continental Shelf (OCS). While much of the public criticism at that time was directed at the government onshore leasing policy, the offshore was estimated by Chase to be capable of yielding at least an additional 500,000 barrels per day by 1990 if a more expansive leasing policy were followed.

The emphasis of the Department of the Interior under the previous administration was on a program that, utilizing the Department of Energy's computer program, would "maximize" the benefit of the leasing program. This maximization was subject to a series of constraints, some 15 in all, that included the time required to develop each sale, environmental studies necessary, weather, capital availability, rig availability, and manpower availability. Although the net benefit to the nation was purportedly maximized, one was left wondering whether achieving the maximum revenue to the government was not, in fact, the goal.

Events of the last decade, if they have done nothing else, have served to show the fallible nature of expert judgment in almost all aspects of the oil market, including the supply response to changing price. Rig availability in the U.S. was thought by many to be a significant constraint in 1979. The huge run-up in active rigs through 1981 was much greater than most analysts anticipated and cast doubts on the necessity of a rig availability constraint. Similar points can be made with respect to most of the constraints considered at that time by the Department of Energy. It is our view that market determination will, in most cases, develop the optimum decisions and that assumed constraints on the interplay of market forces will lead to inefficiencies. This is particularly the case for the offshore leasing program. The potential of the OCS is great, and even under the previous leasing program oil production was projected to rise by some 400 to 600 thousand barrels per day by 1990.

Secretary of the Interior James Watt has announced a new leasing program that will make available more than one billion acres over the next five years. This proposal includes "area wide" lease offerings in which entire regions are being made available for lease. Examples include the Western Gulf of Mexico, at 35 million acres, Central and Northern California (one region) at 37 million acres, and the Diapir Field in the Beaufort Sea at 49 million acres. The first such sale will be the Central Gulf of Mexico, sale number 72, scheduled for May, 1983 and covering 46 million acres. This sale is due to have a draft environmental impact statement presented in August, 1982.

U.S. Wholesale Prices . . .
BY MONTHS
cents per gallon



The program proposed is large, includes areas of prime interest to industry, and is being pushed as rapidly as procedures will allow. By the completion of the schedule in 1987, the bulk of the OCS will have been offered for leasing, which is going to have a marked effect on the development of the OCS resources. In this article, after reviewing how the U.S. leasing program will change, we make an estimate of the bottom line—how much more oil and gas the new program will yield, and its effect on balance of payments and government lease bonus revenues.

Table A summarizes the OCS lease sale experience over the last eight years.

TABLE A

1974-1981 LEASE SALE EXPERIENCE

Year	No. of Sales	Acres Offered (Thousands)	Acres Leased (Thousands)	Bonus Paid (Million $)	Average Per Acre ($)	Range Per Acre ($)
1974	5	5006.9	1762.2	5022.8	2850.3	25 – 4968
1975	4	7247.3	1679.9	1088.1	647.7	438 – 1346
1976	4	2827.4	1278.0	2242.8	1754.9	1091 – 1238
1977	2	1843.1	1100.7	1568.6	1425.1	804 – 1933
1978	4	3140.7	1297.3	1767.1	1362.1	304 – 2113
1979	6	3412.2	1767.5	5078.8	2873.4	180 – 5800
1980	3	2563.5	1134.3	4204.7	3706.9	551 – 4853
1981	7	7679.7	2231.4	6820.1	3056.4	30 – 3774

In terms of geographic areas, the leases offered and taken are covered in Table B.

Past bidding provides a basis for estimating future bids. On average, 4.2 million acres per year were offered between 1974 and 1981, and 1.5 million acres leased. The average acreage being offered in the next five years is over 200 million per year, approximately half of which will be in Alaskan waters. In the 1974-1981 period, Gulf of Mexico leases represented nearly 63 percent of the total. In the next five years, offered tracts in the Gulf of Mexico will represent about 14 percent of the total acreage. Despite this, Gulf of Mexico acreage offered will be nearly seven times the total area offered there in the previous eight years.

TABLE B

LEASES OFFERED AND TAKEN BY REGION

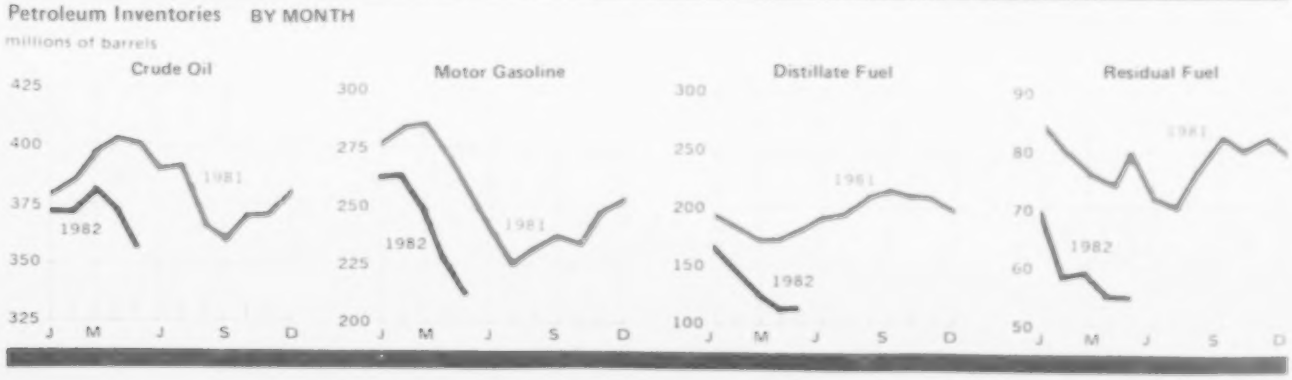
Region	No. of Sales	Sale Years	Acres Offered (Thousands)	Acres Taken (Thousands)	Bonus (Million $)	Bonus ($) Per Acre
Alaska	4	76, 79, 80 81	3,372.7	699.9	1,158.5	1,655
Atlantic	6	76, 78, 79 81	6,595.4	1,907.2	2,749.9	1,442
California	3	75, 79, 81	2,654.0	890.4	3,247.7	3,647
Gulf of Mexico	22	74–81	21,198.8	8,753.5	20,636.9	2,358
			33,720.9	12,251.0	27,793.0	2,269

From Table B, it can be seen that the four basic areas are not all valued equally. This table, covering eight years, masks much of the impact of knowledge gained over time and variations due to changing oil price expectations. Bids for the first mid-Atlantic sale, for example, were higher than for subsequent years due to the ultimately disappointing experience in the Baltimore Canyon. Additionally, bonus bids in 1974, 1979, and 1980, years when oil prices were increasing and future price expectations were high, were generally higher than for other years. The bids, then, are affected by the region, the state of knowledge of each region, and general expectations as to oil price movements.

Even during the relatively restricted leasing over the last eight years, not all the areas offered were bid on. This will continue to be true, as not all the acreage offered under the new program will be of interest. The big plus, however, is that with the broader range of offers, there is much more scope for bidders to apply their individual judgment and preference as to the areas likely to show the most profit. The number of bids per tract in all but the most exciting areas may well be reduced and the average bid per area may fall. But this will encourage more entrants into the bidding and provide much more scope for vision and entrepreneurial skill within the U.S. oil industry. Thus, more acres will be bid for by more concerns than has been the case previously. And, while the price bid per acre will almost certainly fall on average, the total amount bid will probably be up significantly from what it otherwise would have been.

The sales already on the books from the previous program can give us some idea of the change in anticipated value of the regions, but until we see the bids made for the first major regional sale – Central Gulf of Mexico in May, 1983 – the precise impact of the expanded lease program on the number of bids per tract and total funds bid can only be guessed at.

Previous Gulf of Mexico sales have averaged less than one million acres. This sale is proposed to be of 46 million acres. There have been less than three sales per year of Gulf of Mexico leases, with 1981 average costs per acre for successful bids being around $3,000, compared with about $4,500 in the previous two years. Given current oil price expectations, bids at the October sale (sale number 69 of the current leasing program) will probably be low by recent standards. If price expectations remain weak, the 1983 Gulf of Mexico sale may also have relatively low bids. The increased acreage offered, however, could easily raise the total sums bid by a factor of five. Assuming the policy on minimum acceptable bids is reasonable, the acreage leased could be up by a factor of eight or nine. This implies an average price per acre of around $1,000 for the 1983 sale with about 12 million acres being leased. It must be emphasized that this is only a guess. If this guess proves correct, however, and other areas show similar trends, then taken together receipts resulting from the revised program could easily reach $16 billion annually. This increase from an average of about $3.5 billion under the old program would have a fairly dramatic effect on the U.S. E&P program—not to mention government revenues. The offshore exploration program would be significantly increased, with a doubling of expected activity by 1990 being a very conservative estimate.



The funds to finance increased OCS expenditures by the petroleum industry can come from three sources—transfer of investment from U.S. onshore to U.S. offshore, transfer of investment from outside the U.S. to U.S. offshore, and increased debt financing. Since it takes some years for E&P increased penditures to pay off in increased cash flow from new production, there will have to be some transfer of effort from other areas in the early years. By 1990, however, the payoff will become apparent, and an increase in U.S. offshore production of 500-700 thousand barrels per day could be anticipated, which would have a positive balance of payments effect of over $15 billion per year. We continue to feel that the accelerated OCS program is a crucial step in the right direction.

Colin P. Carter

U.S. REFINERY MARGINS

As shown in Table 1, the tremendous deterioration of refinery margins since October, 1981 appears to have been reversed beginning in March. By May, margins at Type 1 refineries had surpassed last November's levels, while Type 2 refineries were close to breaking even on a gross margin basis. It is possible that when the June refiner acquisition cost data becomes available, Type 2 refineries will show a small positive gross margin for the first time since 1979. Price increases were posted across the board for all refined products on average in June, while the available evidence on crude costs indicates essentially no change.

TABLE 1 U.S. REFINERY MARGINS
(Dollars Per Barrel)

	Type 1 Refinery	Type 2 Refinery
1975	1.21	0.10
1976	2.01	0.31
1977	2.49	0.94
1978	2.39	0.10
1979	4.19	0.84
1980	4.09	−1.97
January, 1981	3.25	−1.44
February, 1981	2.28	−3.03
March, 1981	3.13	−2.60
April, 1981	4.00	−1.69
May, 1981 (R)	4.13	−1.53
June, 1981 (R)	4.59	−1.48
July, 1981	4.69	−1.57
August, 1981 (R)	4.75	−1.63
September, 1981	4.98	−1.30
October, 1981 (R)	4.98	−1.20
November, 1981 (R)	4.61	−1.40
December, 1981 (R)	4.10	−1.68
January, 1982 (R)	3.83	−1.74
February, 1982 (R)	2.94	−2.22
March, 1982 (P)	2.97	−1.77
April, 1982 (P)	3.06	−1.37
May, 1982 (E)	4.65	−0.22

R = Revised, E = Estimate, P = Preliminary

Note: Spread figures are calculated as follows:

	Motor Gasoline	Kerosine	Distillate Fuel	Residual Fuel
Type 1	50%	8%	25%	17%
Type 2	23%	8%	19%	52%

EUROPEAN REFINERY MARGINS

While crude oil prices on the spot market fell substantially during the first quarter of 1982 in Europe, contract prices were much less responsive. The decline we show in European oil prices in Table 2 represents our assessment of the changes in the cost of contract crude oil as well as product prices. Estimated refinery margins are shown in Table 3. The impact of the slide in product prices in Europe in the first quarter of 1982 is evident in the sharp drop in refinery margins for both high and low conversion refineries. The margins computed are gross margins, that is, they must cover both operating costs and profits. Thus a positive margin does not necessarily indicate that a profit was made. Even assuming a refinery running on spot crude purchased at an estimated average price of $29.50 per barrel, European refinery margins, in March, 1982, would still have been below those of December, 1981 for high conversion refineries.

TABLE 2 EUROPEAN CRUDE OIL AND PRODUCT PRICES
(Dollars Per Barrel)

	SEPT. 1981	DEC. 1981	MAR. 1982	APRIL 1982
Crude Oil	35.70	34.00	32.50	32.00
Gasoline	41.60	40.15	31.40	32.28
Naphtha	39.50	38.00	32.00	32.00
Middle Distillate	39.45	42.05	37.60	38.01
Residual Fuel	31.80	27.70	25.50	26.10

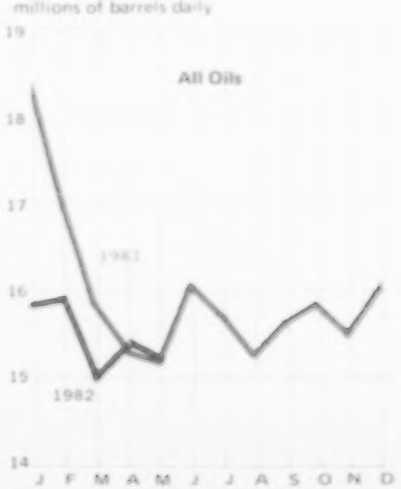
TABLE 3 EUROPEAN REFINERY MARGINS
(Dollars Per Barrel)

	SEPT. 1981	DEC. 1981	MAR. 1982	APRIL 1982
High Conversion	2.34	3.20	−0.59	0.47
Low Conversion	−0.24	−0.44	−2.74	−1.73

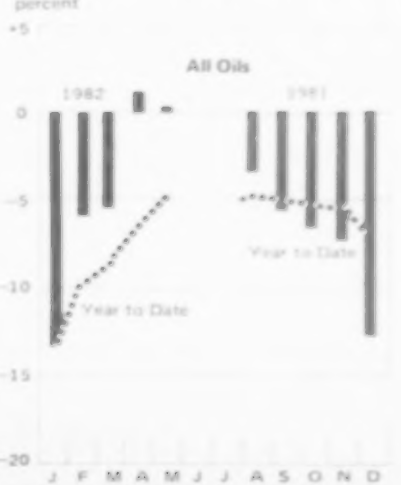
Note: High conversion yield: gasoline 30%, naphtha 10%, middle distillate 33%, residual fuel 27%.
Low conversion yield: gasoline 10%, naphtha 10%, middle distillate 25%, residual fuel 55%.

Demand For Petroleum Products

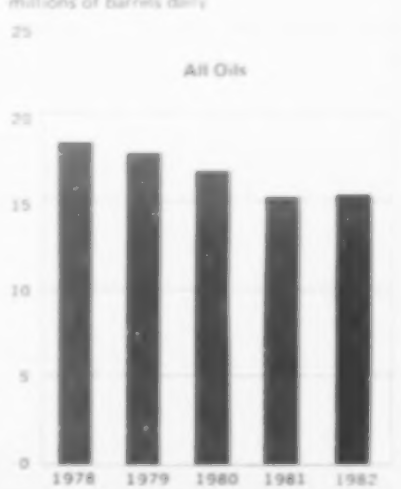
BY MONTH



CHANGE FROM YEAR AGO



MAY AVERAGES



JAPANESE REFINERY MARGINS

Crude oil and product prices in Japan are shown in Table 4.

TABLE 4

CRUDE OIL AND PRODUCT PRICES IN JAPAN

(Dollars Per Barrel)

	SEPT. 1981	DEC. 1981	MAR. 1982	APRIL 1982
Crude Oil	39.30	37.50	36.90	36.00
Gasoline	66.36	70.28	62.60	63.00
Naphtha	41.58	44.04	39.22	39.22
Middle Distillate	52.60	55.70	49.62	51.40
Residual Fuel	41.30	43.70	38.96	40.43

The resulting spreads are then shown in Table 5 and seem to be very large by European and U.S. standards. Recall that these spreads must cover operating costs and profit. Operating costs for Japan include a much greater level of interest payments than is common for the U.S. or Europe, but this does not fully explain the differences. Frankly, we are still investigating the issue.

TABLE 5

JAPANESE REFINERY MARGINS

(Dollars Per Barrel)

	SEPT. 1981	DEC. 1981	MAR. 1982	APRIL 1982
High Conversion	9.95	14.64	9.56	11.58
Low Conversion	7.04	11.55	6.82	9.00

Note: High conversion yield: gasoline 18%, naphtha 17%, middle distillate 30%, residual fuel 35%.

Low conversion yield: gasoline 11%, naphtha 9%, middle distillate 20%, residual fuel 60%.

U.S. SUPPLY/DEMAND

The data on supply and demand is now available for May. Although demand is still running below last year's level on a year-to-date basis, total demand in May was fractionally higher than it was in May, 1981. Demand for motor gasoline and distillates was up, while demand for residual fuel, used by industry and utilities, and the "All Other Oils" category, in which the major component is petrochemical feedstocks, continued to decline.

The increase in distillate demand was the most significant, over 11 percent in May, 1982 compared to May, 1981. Part of this increase may be due to restocking at the dealer level as well as at refineries. Stocks of motor gasoline fell by 14 million barrels in May, or 455 thousand barrels per day, to 213 million barrels, more than 45 million barrels below the year-ago level. On a days supply basis, stocks on May 31, 1982 were equal to 31.4 days of motor gasoline demand compared to 39.1 days last year.

Overall, stocks of all oils have been falling by more than 1.2 million barrels per day on average since the beginning of the year. This drawdown is more substantial than anything we have seen in the United States since the forced stock runoff in early 1979 following the fall of the Shah.

	MAY			3 MOS. AVERAGE			YEAR-TO-DATE		
	1982	1981	Change	1982	1981	Change	1982	1981	Change
	Thous. Bbls. Daily		– % –	Thous. Bbls. Daily		– % –	Thous. Bbls. Daily		– % –
PRIMARY DEMAND									
Motor Gasoline	6,778	6,608	2.6	6,551	6,498	0.8	6,332	6,437	- 1.6
(Unleaded)*	3,517	3,117	12.8	3,496	3,162	10.6	3,335	3,141	6.2
Jet Fuel	923	923	0.0	970	981	- 1.1	994	1,003	- 0.9
Kerosine	93	88	5.7	99	98	1.4	136	136	- 0.4
Distillate Fuel	2,661	1,395	11.1	2,776	2,610	6.4	2,983	3,059	- 2.5
Residual Fuel	1,591	1,769	- 10.1	1,728	1,899	- 9.0	1,914	2,219	- 13.8
All Other	3,200	3,416	- 6.3	3,118	3,358	- 7.1	3,148	3,447	- 8.7
Total Domestic Demand	15,246	15,199	0.3	15,244	15,444	- 1.3	15,507	16,302	- 4.9
Exports	835	595	40.3	831	584	42.4	825	576	43.4
Total Demand	16,081	15,794	1.8	16,075	16,028	0.3	16,332	16,878	- 3.2
New Supply									
Domestic	10,640	10,851	- 1.9	10,756	10,731	0.2	10,770	10,815	- 0.4
Crude Oil	8,689	8,496	2.3	8,688	8,547	1.7	8,684	8,553	1.5
Natural Gas Liquids	1,547	1,554	- 0.5	1,564	1,562	0.1	1,553	1,579	- 1.6
Other Supply	404	801	- 49.6	505	622	- 18.9	532	683	- 22.1
Imports	4,269	5,317	- 19.7	4,258	5,567	- 23.5	4,468	6,011	- 25.7
Crude Oil	2,977	3,881	- 23.3	2,854	4,149	- 31.2	2,970	4,406	- 32.6
Refined Products	1,292	1,436	- 10.0	1,404	1,418	- 1.0	1,498	1,605	- 6.7
Residual Fuel	645	735	- 12.2	701	674	4.1	768	796	- 3.5
All Other	642	701	- 7.7	702	745	- 5.7	730	809	- 9.8
Total New Supply	14,909	16,168	- 7.8	15,014	16,298	- 7.9	15,238	16,826	- 9.4
Crude Oil Refined	11,746	12,555	- 6.4	11,493	12,490	- 8.0	11,627	12,824	- 9.3
Stock Change	-1,172	374	–	-1,061	271	–	-1,095	-52	–
Stocks – End of Month in Million Barrels									
Gasoline	213	259	- 17.7						
Jet Fuel	41	45	- 7.5						
Kerosine	10	13	- 19.3						
Distillate Fuel	112	172	- 34.9						
Residual Fuel	54	79	- 30.9						
All Other	285	328	- 13.0						
Total Products	716	895	- 20.0						
Crude Oil	356	402	- 11.5						
Total – All Oils	1,072	1,297	- 17.3						

Totals may not add due to rounding
*Included in motor gasoline

Sources: *American Petroleum Institute*
Chase Manhattan Bank
Department of Energy